



NUMERICAL-ANALYSIS OF SUPERSONIC FLOW OVER A CIRCULAR CYLINDER

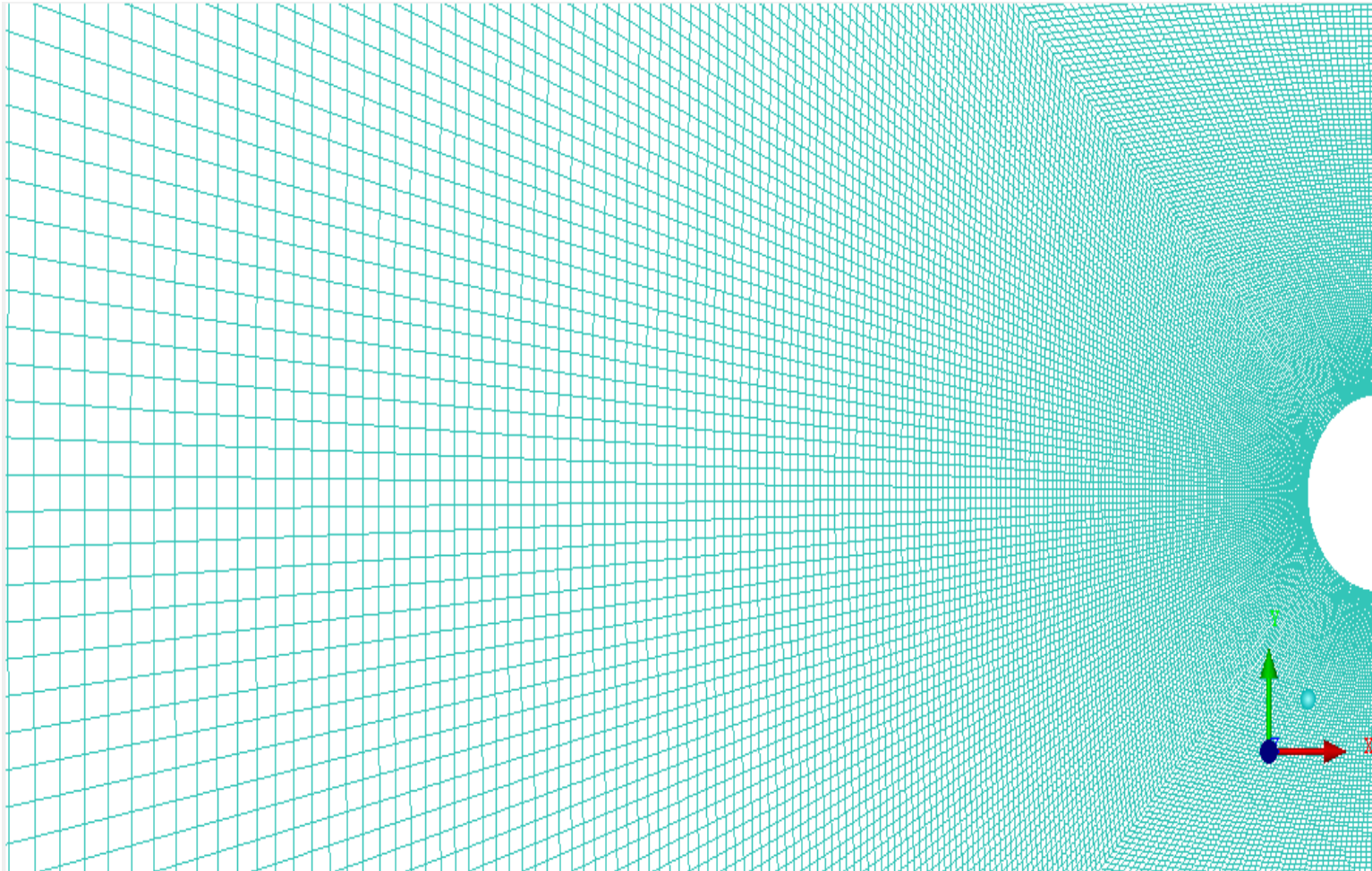
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INTRODUCTION

- The main aim of our present work is to study of supersonic flow over a circular cylinder.
- The commercial **Fluent16.0** software is going to be used for the present work. The results will be compared with the analytical work.
- For the analytical work the formulae which are taken from the titled "Hyper sonic and High temperature gas Dynamics" written by JD Anderson.

MESH

- To mesh the fluid domain **ICEM CFD 16.0** is used here.



SOLVER SETUP

Dimensions : 2D

Type : Density based

2D Space : Planar

Fluid : Air (Ideal gas)

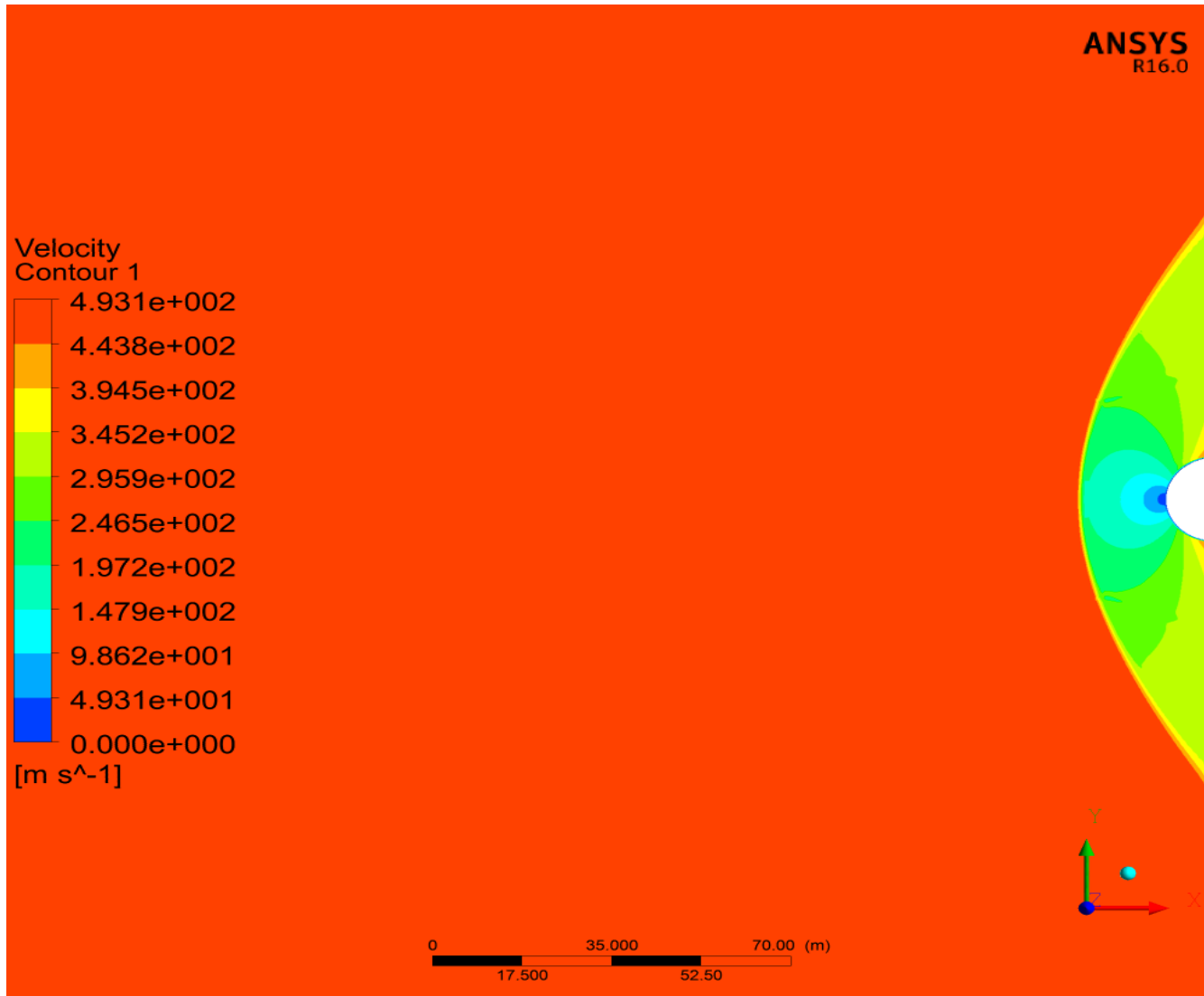
Boundary conditions:

Inlet : Pressure inlet = 5E4 Pa

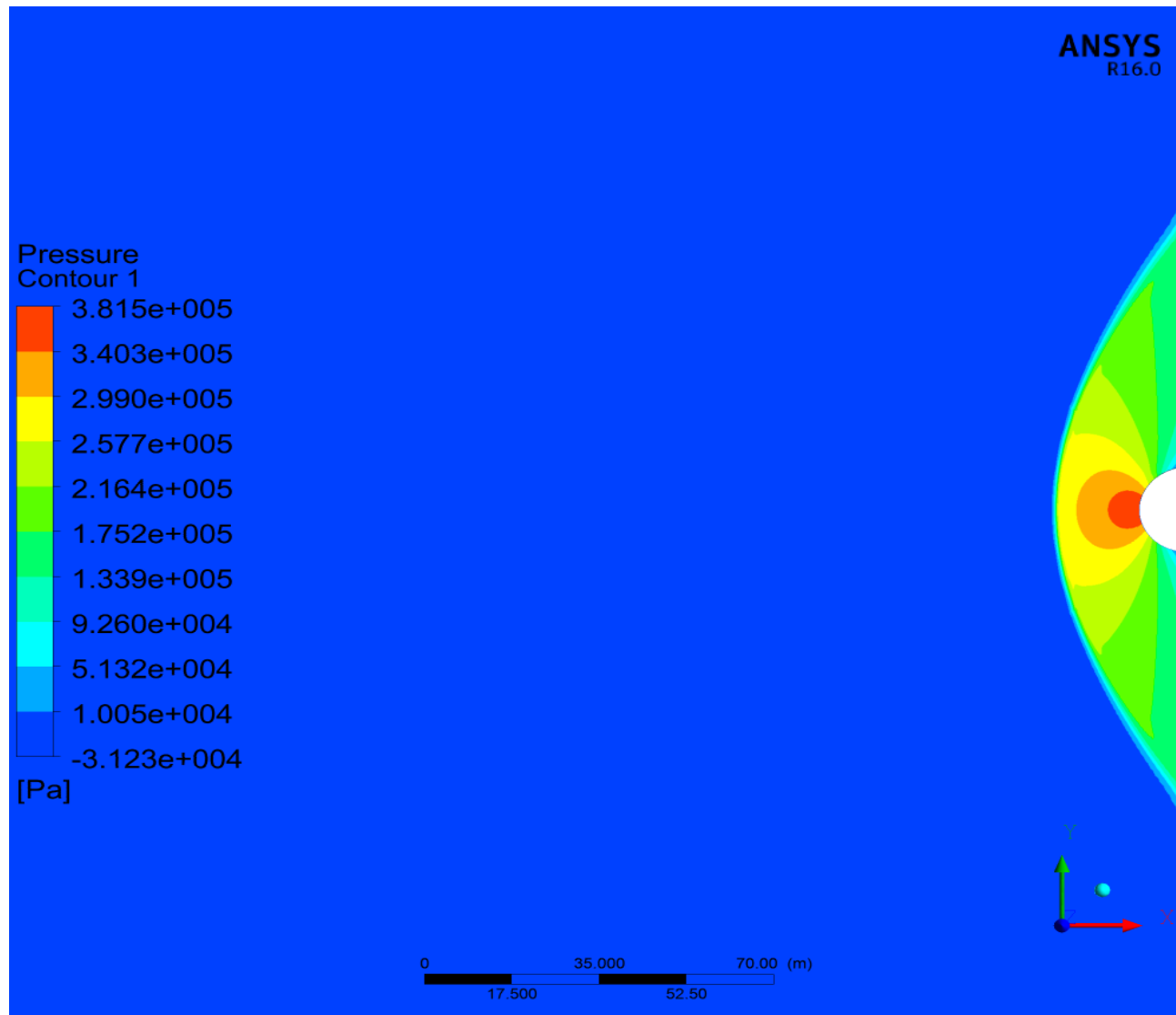
Top & Bottom: Pressure far field M=1.4

Outlet : Pressure outlet=0 Pa

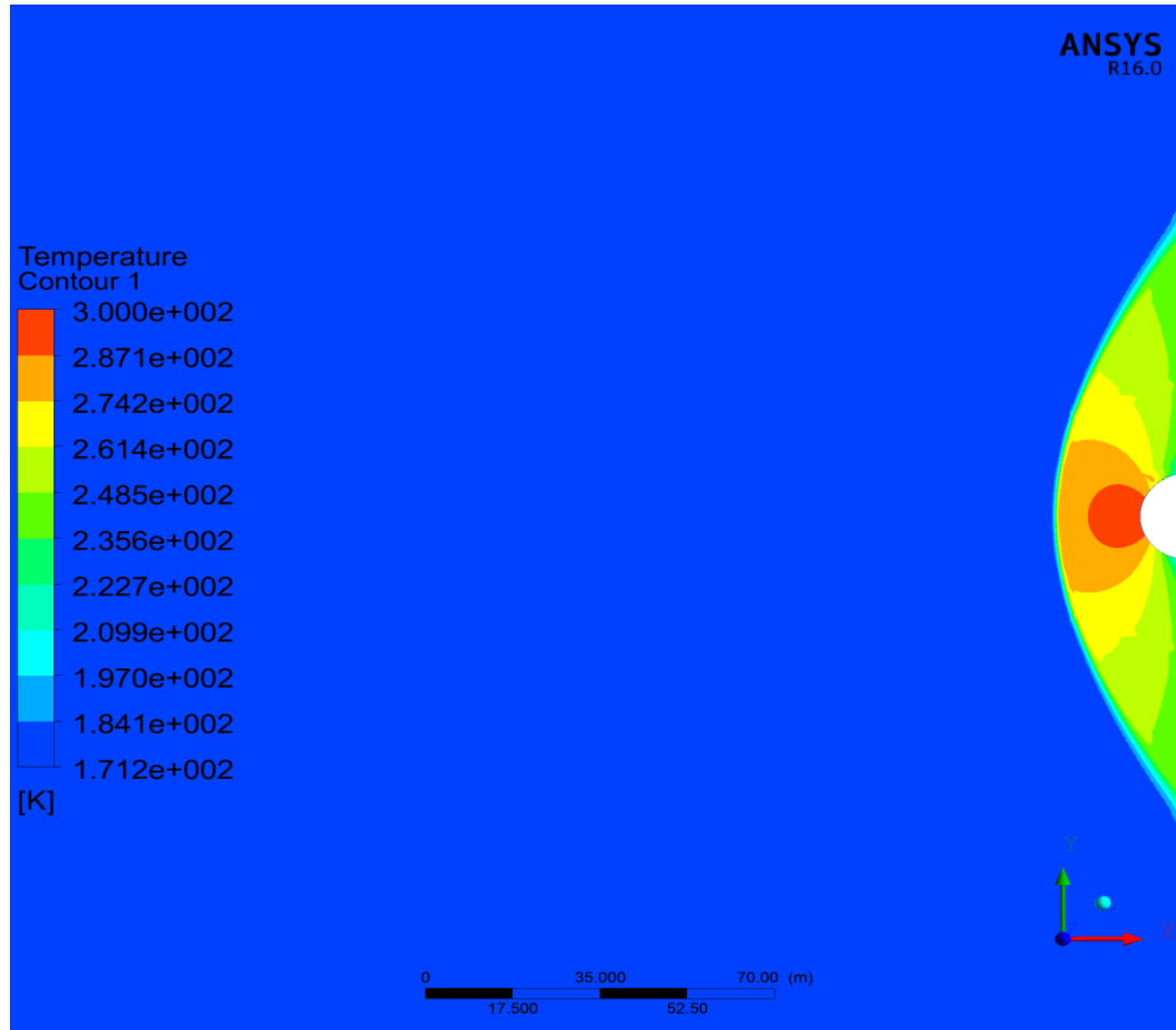
Velocity contour



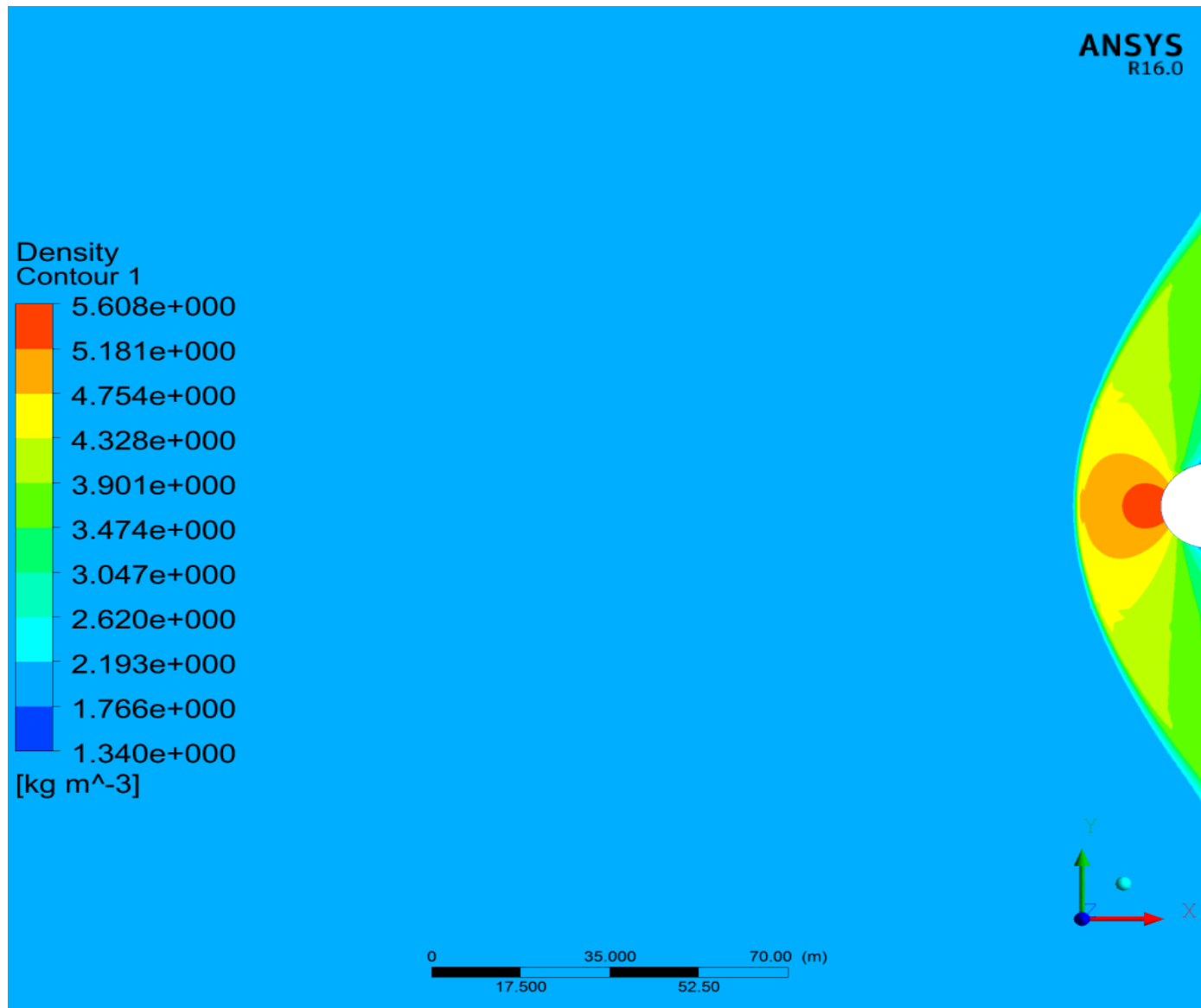
Pressure contour



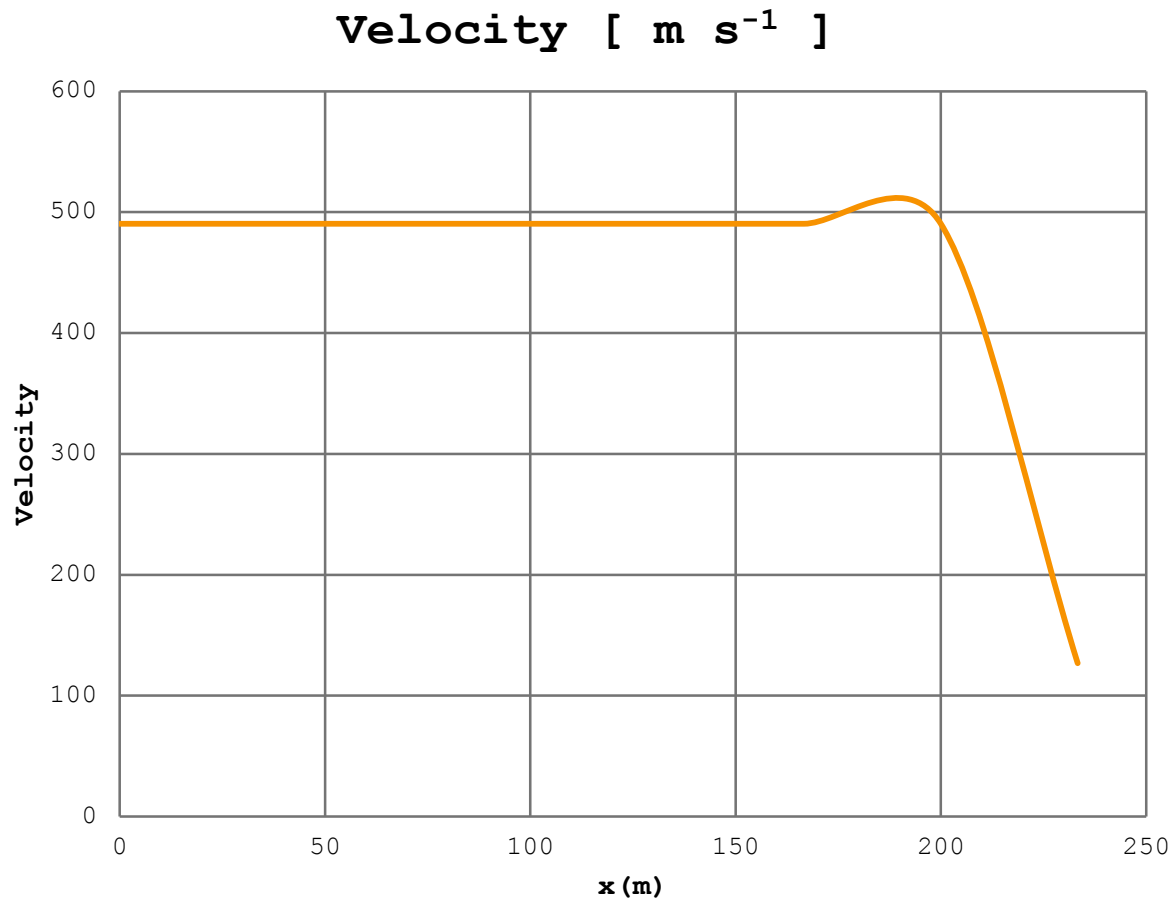
Temperature contour



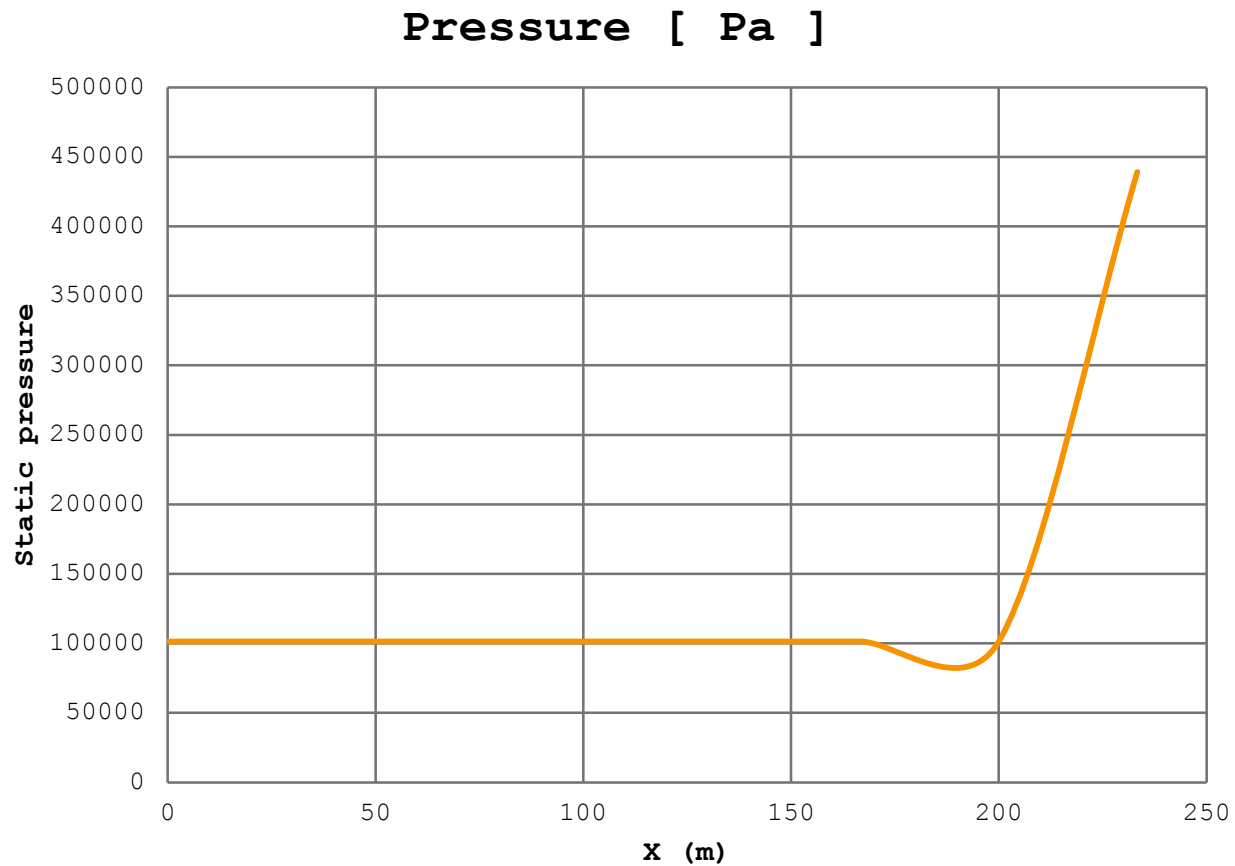
Density contour



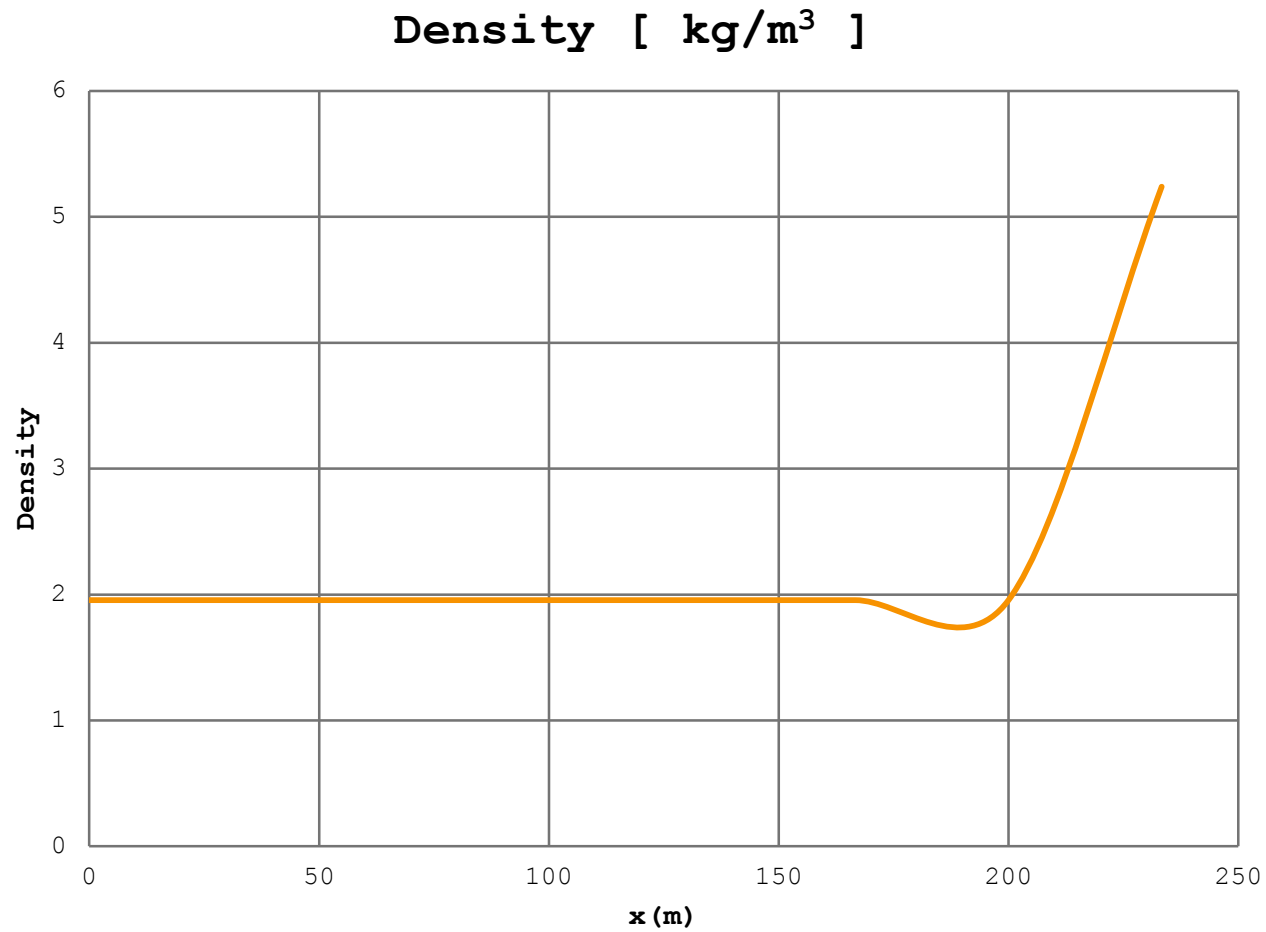
Velocity graph



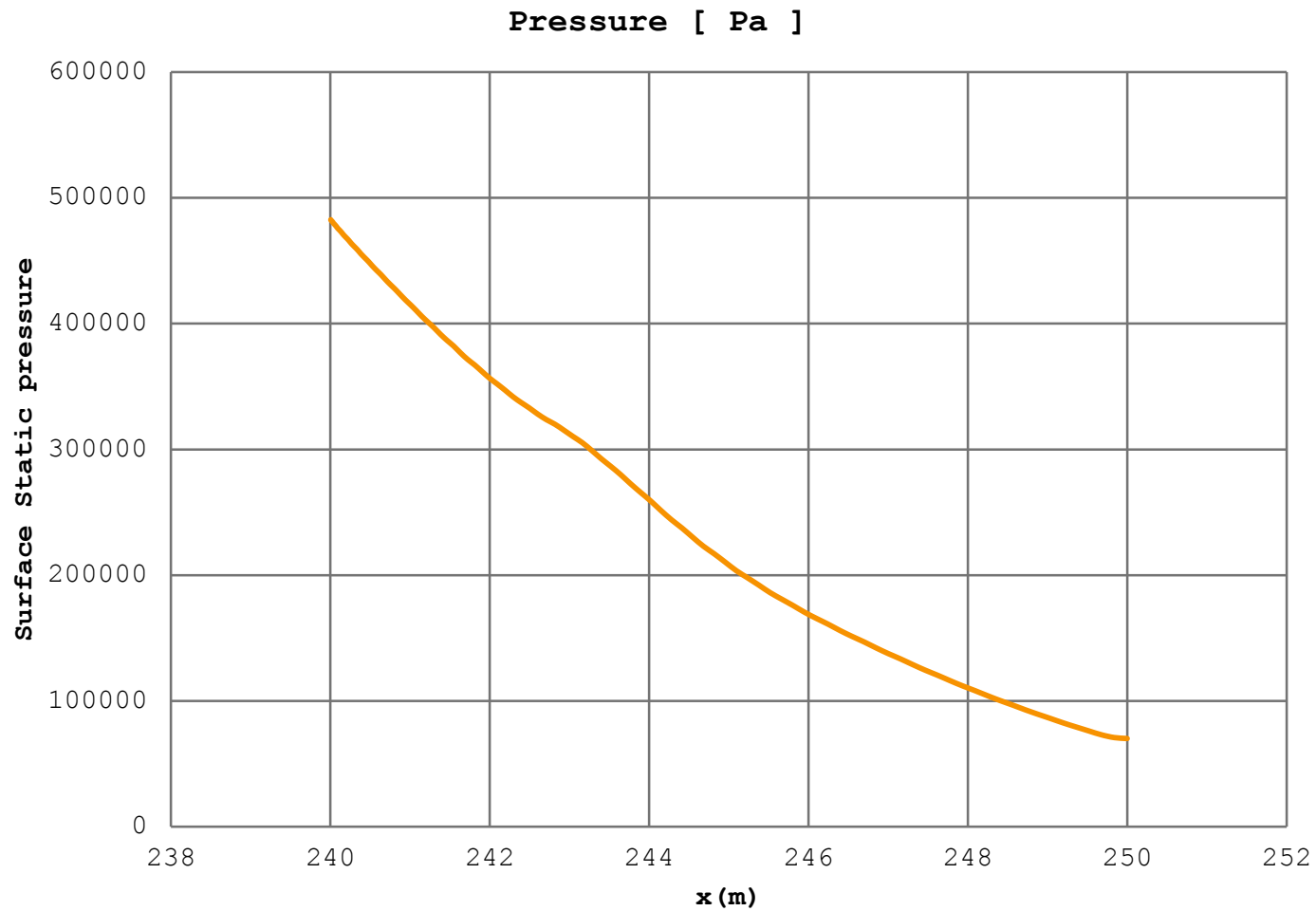
Pressure graph



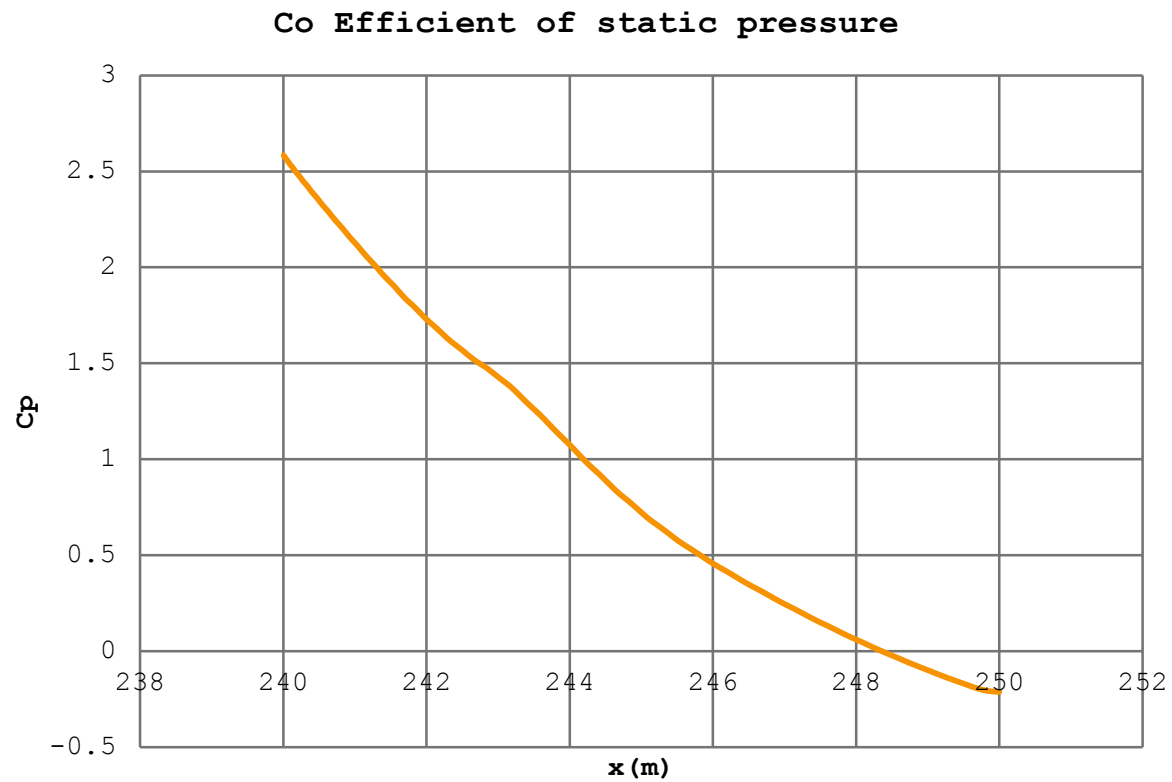
Density graph



Surface Static Pressure graph:

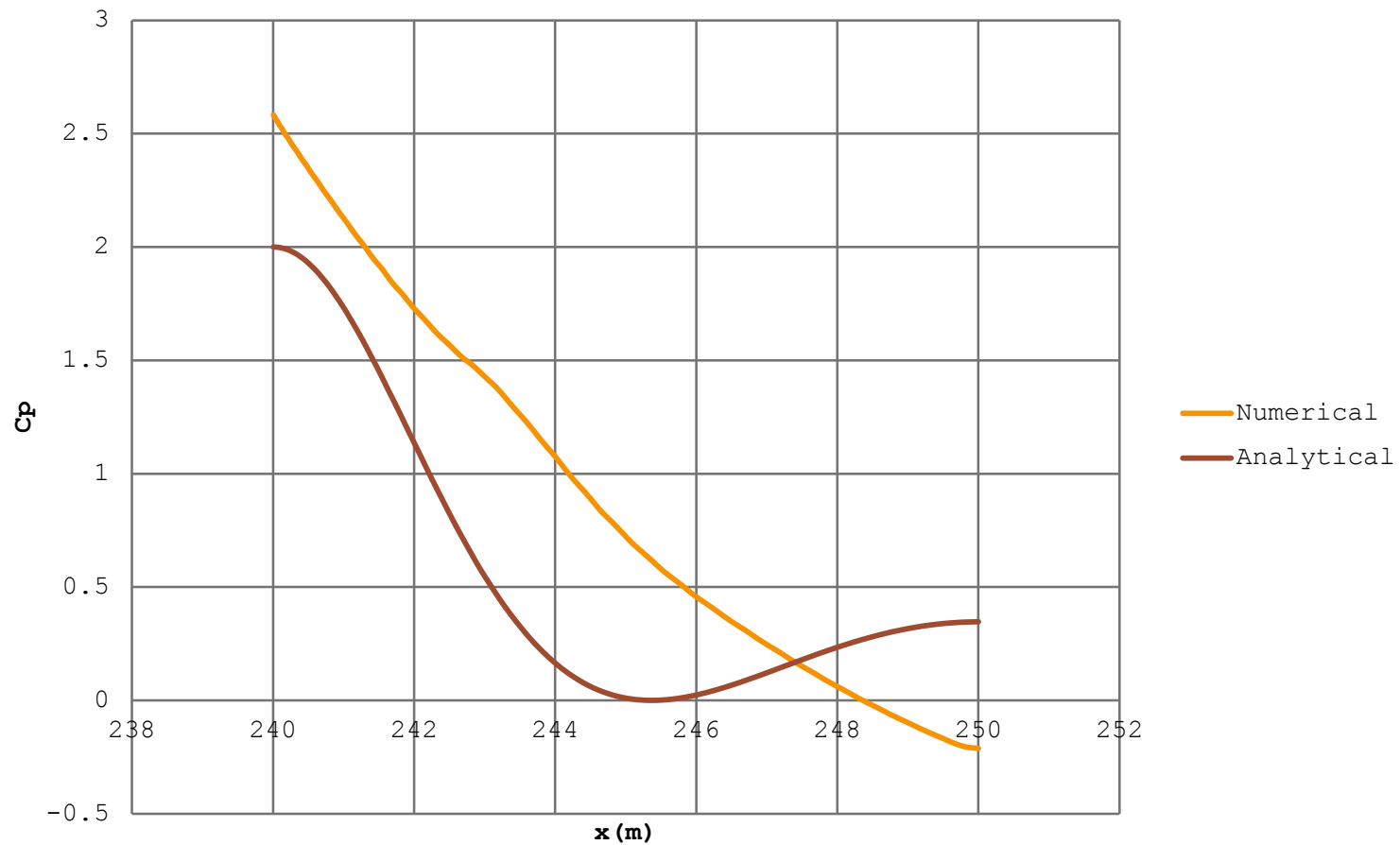


Co Efficient of static Pressure Cp



Comparative Data

Co Efficient of static pressure over
cylindrical surface



THANK YOU...